

Application No. 09/682,421
Amendment dated August 24, 2005
Reply to Office Action of June 1, 2005

REMARKS/ARGUMENTS

Applicant respectfully requests further examination and reconsideration in view of the above Amendments and the arguments set forth fully below. In the Office Action mailed June 1, 2005, claims 1-72 have been rejected. In response, the applicant has submitted the following remarks and amended claims 1, 16, 30, 45 and 60. Accordingly, claims 1-72 are still pending. Favorable reconsideration is respectfully requested in view of the amended claims and the remarks below.

OBJECTIONS TO THE SPECIFICATION

Within the Office Action, it is stated that the disclosure is objected to due to a typographical error on page 9, line 17. By the above Amendment, the applicant has amended the specification according to the Examiner's requests.

REJECTIONS UNDER 35 U.S.C. § 102

Claims 1, 5, 6, 15, 45, 50 and 59 have been rejected under 35 U.S.C. § 102(b) as being anticipated by you as Patent No. 5,511,553 to Segalowitz (hereinafter Segalowitz). The applicant respectfully disagrees with this rejection.

Segalowitz teaches a device, system and method for monitoring multiple physiological parameters continuously and simultaneously. Segalowitz does not teach a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient.

In contrast to the teachings of Segalowitz, the method and apparatus for generating electrocardiogram precordial leads using a precordial central terminal of the present invention includes at least one electrode attached to the patient's back and configured to receive a reference signal. As described above, Segalowitz does not teach a device for acquiring and processing signals including a plurality of electrodes for attachment

to the patient's torso, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient.

The independent claim 1 is directed to a device for acquiring and processing electrical signals produced by a patient's heart comprising a plurality of electrodes for attachment to the patient's upper torso, wherein the plurality of electrodes does not include electrodes for attachments to the patient's limbs, an acquisition module coupled to the plurality of electrodes for acquiring electrical signals from the plurality of electrodes and a signal processor coupled to the acquisition module for generating a plurality of electrocardiogram precordial leads from the acquired signals, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. As described above, Segalowitz does not teach a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient.

Claims 5, 6 and 15 are all dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Segalowitz. Accordingly, claims 5, 6 and 15 are also allowable as being dependent upon an allowable base claim.

The independent claim 45 is directed to a method of acquiring and processing electrical signals produced by a patient's heart comprising positioning a plurality of electrodes on the patient's upper torso, without positioning electrodes on the patient's limbs, acquiring electrical signals from a plurality of electrodes with an acquisition device and generating a plurality of electrocardiogram precordial leads from the acquired electrical signals, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. As described above, Segalowitz does not teach a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of

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electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. For at least these reasons, the independent claim 45 is allowable over teachings of Segalowitz.

Claims 49, 50 and 59 are dependent upon the independent claim 45. As discussed above, the independent claim 45 is allowable over the teachings of Segalowitz. Accordingly, claims 49, 50 and 59 are also allowable as dependent upon an allowable base claim.

REJECTIONS UNDER U.S.C. § 103

Within the Office Action, claims 2 - 4, 16, 30, 33 and 46 - 48 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz in view of U.S. Patent No. 4,026,278 to Ricketts, et al. (hereinafter Ricketts). The applicant respectfully disagrees with this rejection.

Ricketts teaches an electro positioning belt having a Velcro loop fabric along the inner surface. Within the response to arguments section of the Office Action, it is stated that the Ricketts reference discloses a belt adapted to be attached around the circumference of the patient's upper torso (Fig. 1), with a plurality of electrodes coupled to the belt (column 2, lines 45-46 and 53-56) to teach that which is claimed in the present invention. After closely examining these passages in Ricketts, the applicant respectfully submits that Ricketts does not teach an electrode positioned on the patient's back, and configured to collect a reference signal from the patient.

As stated in the Office Action, Segalowitz does not teach a belt adapted to be attached around the circumference of the patient's upper torso. Furthermore, Segalowitz does not teach an acquisition module coupled to the belt in the plurality of electrodes for acquiring electrical signals from the plurality of electrodes. Because neither Segalowitz nor Ricketts discloses the electrode configured on the patient's back to collect a reference signal

from the patient, as taught and claimed in the present invention, their combination then does not teach that which is claimed and taught in the present invention.

Claims 2 - 4 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Segalowitz. Accordingly, claims 2 - 4 are also allowable as being dependent upon an allowable base claim.

The independent claim 16 is directed to an electrocardiogram device for acquiring and processing electrical signals produced by a patient's heart comprising a belt adapted to be attached to the patient's upper torso, a plurality of electrodes coupled to the belt, wherein the plurality of electrodes does not include electrodes for attachments to the patient's limbs, an acquisition module coupled to the belt and the plurality of electrodes for acquiring electrical signals from the plurality of electrodes, a signal processor coupled to the acquisition module for generating a plurality of electrocardiogram precordial leads from the acquired electrical signals, a transmitter coupled to the acquisition module for transmitting the plurality of electrocardiogram precordial leads and a receiver wirelessly coupled to the transmitter for receiving the acquired electrical signals, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. As described above, neither Segalowitz, Ricketts nor their combination teach a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. For at least these reasons, the independent claim 16 is allowable over the teachings of Segalowitz, Ricketts and their combination.

The independent claim 30 is directed to an acquisition device for attachment to a patient and for acquiring electrical signals produced by the patient's heart comprising a belt adapted to be attached to the patient's upper torso, a plurality of electrodes coupled to the belt, the plurality of electrodes including at least one electrode position within the belt so

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that when the belt is attached to the patient, the electrode contacts that patient's chest, and at least one electrode positioned within the belt so that when the belt is attached to the patient the electrode contacts the patient's back, wherein the plurality of electrodes does not include electrodes for attachment to the patient's limbs, wherein the at least one electrode positioned on the patient's back is configured to collect a reference signal from the patient, an acquisition module including a signal processor coupled to the belt and the plurality of electrodes for acquiring electrical signals from the plurality of electrodes and for generating a plurality of electrocardiogram precordial leads from the acquired signals and a transmitter coupled to the acquisition module for transmitting the plurality of the electrocardiogram precordial leads to a remote location. As described above, neither Segalowitz, Ricketts nor their combination teach the feature of a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. For at least these reasons, the independent claim 30 is allowable over the teachings of Segalowitz, Ricketts and their combination.

Claim 33 is dependent upon the independent claim 30. As discussed above, the independent claim 30 is allowable over the teachings of Segalowitz, Ricketts and their combination. Accordingly, claim 33 is also allowable as being dependent upon an allowable base claim.

Claims 46 - 48 are dependent upon the independent claim 45. As discussed above, the independent claim 45 is allowable over the teachings of Segalowitz. Accordingly, claims 46 - 48 are also allowable as being dependent upon an allowable base claim.

Within the Office Action, claim 7, 14, 51 and 58 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz as applied to claims 1, 5, 45 and 49

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above and further in view of U.S. Patent No. 6,389,308 to Shusterman, et al (hereinafter Shusterman). Claims 7, 14, 51 and 58 are dependent upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 7, 14, 51 and 58 are all allowable as being dependent upon an allowable base claim.

Claims 8, 11, 12, 52, 55 and 56 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz as applied to claims 1 and 45 above, and further of view of GE Medical Systems Information Technologies, ACI-TIPT Standard 12/15-Lead Placement. Claims 8, 11, 12, 52, 55 and 56 depend upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 8, 11, 12, 52, 55 and 56 are also allowable as being dependant upon an allowable base claim.

Claims 9 and 53 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz and GE Medical Systems Information Technologies as applied to claims 8 and 52 and further in view of Shusterman. Claims 9 and 53 are dependent upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 9 and 53 are allowable as being dependent upon an allowable base claim.

Within the Office Action, claims 10 and 54 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz, GE Medical Systems Information Technologies and Shusterman as applied to claims 9 and 53 above, and further in view of U.S. Patent No. 5,615,687 to Pritchard (hereinafter Pritchard). Claims 10 and 54 are dependent upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 10 and 54 are allowable as being dependent upon an allowable base claim.

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Within the Office Action, claims 13 and 15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz and GE Medical Systems Information Technologies as applied to claims 12 and 56, and further in view of Pritchard. Claims 13 and 57 are dependant upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 13 and 57 are allowable as dependant upon an allowable base claim.

Within the Office Action, claims 60 and 71 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ricketts in view of Segalowitz and Shusterman. The independent claim 60 is directed to a method of acquiring and processing electrical signals produced by a patient's heart comprising positioning a plurality of electrodes on the patient's upper torso, the plurality of electrodes including at least one electrode positionable on the patient's chest and at least one electrode positionable on the patient's back, wherein the plurality of electrodes does not include electrodes for positioning on the patient's limbs, wherein the at least one electrode positioned on the patient's back is configured to collect a reference signal from the patient, acquiring electrical signals from the plurality of electrodes with an acquisition module; generating an approximation of an electrical potential near the center of the patient's heart by determining a weighted combination of a plurality of the acquired electric signals and generating a plurality of electrocardiogram precordial leads from the acquired electrical signals by subtracting the approximation of the electrical potential near the center of the patient's heart from each one of the signals acquired from the at least one electrode on the patient's chest. As described above, neither Ricketts, Segalowitz nor Shusterman nor their combination teach a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient. For at least these reasons, the independent claim 60 is allowable over the teachings of Ricketts, Segalowitz, Shusterman and their combination.

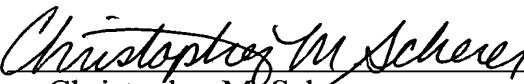
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Claim 71 is dependent upon the independent claim 60. As discussed above, the independent claim 60 is allowable over the teachings of Ricketts, Segalowitz, Shusterman and their combination. Accordingly, claim 71 is also allowable as being dependent upon an allowable base claim.

For the reasons given above, applicant respectfully submits that that the claims are now in a condition for allowance, an allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at 414-271-7590 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

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